Anderson, Geo. W.

COAL:

With the respects of D. V. M. Green The Compiler

IT'S

DEVELOPMENT

AND

DESTINY.

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COAL:

ANTHRACITE AND BITUMINOUS.

Every thing relating to the development and consumption of coal in the United States, is every succeeding year becoming more and more interesting.

The following able article is from the pen of Prof. Geo. W. Anderson, of New York, and appeared in "The Christian Review" (Baptist) for April, 1856.

THE HISTORY AND DESTINY OF COAL.

Mineral coal is now rapidly finding its way into every part of our own country and of the world. Its importance as an agent of human progress is daily becoming more apparent. We deem it fitting therefore to draw attention to the past history and the present influence of this fuel, and to the glimpses which the subject gives us of the future of our own country and of the world; of the future of our country in its connection with the future of the world.

At the present day it is impossible to determine the persons that first used mineral coal for fuel, or the age in which they lived. It is said, indeed, that the early Britons were accustomed to use it, probably long before the Roman conquest. In proof of this, reference is made to certain stone hammers and hatchets, found in some mines in Yorkshire. The proof, however, is by no means conclusive. It is probable that it was not used until nearly the commencement

of the Christian era. Dr. Bruce, a clergyman of Newcastle-upon-Tyne, has traced the famous wall of Hadrian through its whole extent, and thinks that he has discovered conclusive evidence of the use of coal by the Romans, possibly in the early part of the second century. We give his statement:

"In nearly all of the stations of the line, the ashes of mineral coal have been found; and in some a store of unconsumed coal has been met with, which, though intended to give warmth to the primeval occupants of the isthmus, has been burnt in the grates of the modern English. In several places the sources of the coal can be pointed out; but the most extensive workings that I have heard of, are in the neighborhood of Grindon Lough, near Sewisigshields. Not long ago a shaft was sunk with the view of procuring the coal which was supposed to be beneath the surface. The projector soon found, that, though coal had been there, it was all removed. The ancient working stretched beneath the bed of the lake."

But the amount of coal consumed at that early day was probably not very large. And possibly the consumption ceased almost entirely when the Romans finally left the island, A. D. 411. Even as late as the thirteenth and fourteenth centuries we find indications that it had not yet come to be generally considered as one of the necessaries of life. Newcastle-upon-Tyne at the close of the thirteenth century, was accustomed to use coal and to furnish it in small quantities to its immediate neighbors. About the year 1350, it was first introduced into London. It was mainly employed by manufacturers who were not at that time very numerous, nor possessed of great influence. The people of London, in general, were sorely displeased with the fuel, and earnestly besought King Edward to banish it. The smoke was supposed to be prejudicial to health, and was known to be by no means conducive to cleanliness. The King was fain to listen to their prayer, and the fuel

was proscribed. Yet what could such proscriptions avail! The era of coal had begun and the opposition of kings and subjects could do no more than to stay for a brief season the day of its power. Notwithstanding the opposition, which from time to time arose, before the time of Charles I., (1625), the use of coal for fuel had become a necessity, and the worthy people of London were compelled to submit to all its accompanying smoke.

The cause of this necessity will be found in the growing manufactures of England; especially in the increasing manufacture of iron. Iron had been made in Britain for some centuries before the Christian era; some say for five or six hundred years previous. The manufacture was increased after the Roman conquest and continued until the departure of the conquerors, A. D. 411. From this time until the Norman conquest, A. D. 1066, it seems to have received very little attention; though some of the vast beds of cinder found in the forest of Dean, in Monmouthshire, are called *Danes' Cinders*, from the idea that they were made by the Danes during their residence on the island. But from the time of the Norman conquest, the production gradually increased. The increase, however, was very slow, for at the time when Edward III., at the request of the people of London, banished coal from the city, he also enacted a law forbidding the export of iron. The production at that date (1358), was not equal to the demand. During the fourteenth and fifteenth centuries, large importations of implements of iron and steel, were made from Germany, Prussia and Spain. And it is a fact worthy of note, that the manufacturers of England felt so deeply the necessity of protection for their rising iron trade, they were so deeply impressed with the evils of unrestricted importation, they feared so much a free foreign competition, as to combine in earnest petitions to the House of Commons, not merely for a protective tariff, but for an absolute prohibition of certain articles. And in the time

of Richard III., A. D. 1483, an act was passed entirely prohibiting the importation of knives, swords, tailors' shears, scissors, andirons, fire forks, gridirons, stock locks, keys, hinges, spurs, bits, stirrups, shoe buckles, iron wire, iron candlesticks, grates, chains and other things of like material.

It would seem that the trade flourished for a period subsequent to the enaction of the law; for in the year 1542, so great was the quantity of wood consumed in the smelting of iron (for wood charcoal was the only fuel used), and so great the consequent scarcity of that fuel, that a law was enacted forbidding the cutting down of any timber of the breadth of one foot at the stub for the purpose of making charcoal for the iron manufacture. This law applied to all places within fourteen miles of the sea, or of any navigable stream; except in the county of Sussex, and the Weald of Kent, and a few other places specified. In 1581, new restrictions were deemed necessary. Another act was passed limiting the erection of iron works because of the increasing scarcity of wood; "because" to use the language of the act "it [the supply of wood] doth daily decay and become scant, and will, in time to come, become much more scarce; by reason of which the prices are grown to be very great and unreasonable."

A new argument now has been found for the use of coal, and the citizens of London will soon be compelled to make a compromise between their love of neatness and their love of money. There will be plenty of coal in London by and by. The price of wood is becoming very great and unreasonable. There are anxious and sometimes angry expostulations at the wood wharves along the Thames. There are sage deliberations over mutton chops and pots of ale in London inns. There are grave discussions between the good man and his wife, at home, about the enormousness of this particular item in their household expenses. Yes, and grave discussions in Parliament too; for only four years later we find another act passed prohibiting the erec-

tion of any new iron works, in Surrey, Kent and Sussex; and forbidding the use of timber of one foot square at the stub for any iron whatever. A new era is now opening for coal. It will come slowly on. But come it must. The industry of the world cannot be checked, and fuel must be secured for the making of iron. Without iron in larger and still larger quantities the bright prospects that are opening to the useful arts and manufactures can never be realized.

By these legislative enactments and by the causes which led to them, the attention of iron masters was called to the use of coal for the smelting of iron. At length, in 1619, after many unsuccessful attempts, the difficulty was overcome by Dud Dudley, a mere lad, fresh from Oxford University. He secured a patent from King James I., and for a few years went on amid great opposition and many difficulties, making, as he says, "annually great store of iron, good and merchantable, and sold at £12 per ton. I also made all sorts of cast-iron wares, as brewing-cisterns, pots, mortars, and better and cheaper than any yet were made in these nations with charcoal."

But the times of civil commotion which followed—the contest between Charles I. and his Parliament, the trial and execution of Charles, the overthrow of the Commonwealth—were not favorable to any steady progress in the mechanic arts. And in addition to this series of unfavorable circumstances, the use of coal in the iron trade had to encounter the jealousies and opposition of both master manufacturers and their men. So true is it, that men are generally very slow in their assent to great improvements in the arts, and that it requires much time to secure the full mastery over the natural agents made known to them. It can occasion no surprise, therefore, that more than one hundred years elapsed before coal came into general use in England for the smelting of iron. As a necessary consequence of the failure of one kind of fuel and the want of

a proper substitute, the number of furnaces in the kingdom diminished until in 1740, there were only 59 remaining, not more than three-fourths of the former number. The sum total of their production was only 17,350 tons, an average for each furnace of about 294 tons, or about 5½ tons per week. To meet the demand, which was vastly greater than the supply, large quantities during this period were imported from Russia and Sweden. In 1840, Mr. Jessop of the Butterly Iron Works, Derbyshire, reported to a committee of the House of Commons that the number of iron furnaces was 404, and the annual product 1,396,400 tons. He estimated the quantity of coal used in smelting at 4,877,000 tons, and the further quantity, for converting it into wrought iron, at 2,000,000; making a total of 6,877,400 tons of coal consumed in the product of pig and bar iron. Mr. Blackwell, a recent authority, himself a large producer of iron, estimates the production of England, Scotland, and Wales at 2,500,000 tons. The coal consumed in smelting would, according to the computation of Mr. Jessop above be 8,750,000, and for making bar iron 3,750,000; making the consumption of coal in 1850, for pig and bar iron amount to 12,500,000 tons. To smelt the same amount of iron, were charcoal used, it would require —on the average of 1½ tons of charcoal to a ton of metal —3,750,000 tons. The havoc made upon the woods and forests of the country by the annual production of 3,750,000 tons of charcoal would soon strip it of every stick of timber. It would be impossible for England to be what she now is without her beds of mineral coal.

The change in the locality of the iron manufacture in Great Britain in consequence of the change of fuel is worthy of note. The manufacture was formerly prosecuted in the forests of the South of England, and furnaces were found in abundance in Monmouthshire, Gloucestershire, Sussex, and Kent. But when the use of coal gave a new impulse to the trade, it rapidly concentred around the great

coal fields. At present South Wales, South Staffordshire and Scotland are the great iron producing regions. In 1850, South Wales produced 700,000, South Staffordshire 600,000, and Scotland 600,000 tons. The first draws its supplies from the great Welsh mines, the second from the Dudley coal fields, and the latter mainly from the coal beds of East, West and Mid Lothians and Fife.

The annual consumption of coal in Great Britain is nearly 40,000,000 tons. This includes the amount used for the consumption of private families, for manufactures, steamboats and locomotives, and for the production of gas. The coal of England lights her darkness by night, diffuses comfort throughout her dwellings, bears her people rapidly from place to place, by land and water, and drives her myriad-armed machinery. In short, it is the coal of Great Britain that gives to her such a manufacturing ascendency, and has secured to her the title of "the work-shop of the world." By this her vast industrial system has been called into being, and kept in vigorous motion. Shut up her coal mines and she would sink at once from her present position, to the rank of a third or fifth rate in power in Europe.

In the United States, there has been a rapid increase in the consumption of coal, since the year 1823. In that year the amount of Lehigh coal consumed was only 2440 tons. The Schuylkill coal had not yet been brought into market. In 1825, 6500 tons were drawn from that source. In 1855, the product of all the anthracite mines was about six million tons. The bituminous coal of the United States is scattered so widely and worked in such a number of places that it is difficult to obtain any reliable statistics. It cannot, however, be computed at less than 2,500,000 tons annually.

In other countries the increase in the consumption of coal has been very great. A few statistics will show how vast the coal trade has become. These estimates are for the year 1853.

Great Britain,	37,000,000
Belgium,	5,000,000
United States, (1857),	9,500,000
France,	4,200,000
Prussian States,	3,500,000
Austrian States,	700,000
Spain,	550,000
Total,	60,450,000

Here, then, we have the annual consumption of coal in the world. This enormous mass would furnish all the vessels of the United states—whether engaged in the navigation of the ocean, of our lakes, or our rivers—with cargoes. Or, if we suppose it to be placed in cars such as are used for its transportation, it would make a line sufficiently long to girdle twice the globe.

And the whole of this trade has developed itself within the brief period of about 300 years. The coal trade of the entire world at the time when the Pilgrim fathers landed at Plymouth Rock, would bear no comparison with the trade of one small county in Pennsylvania in the year 1855. Indeed, the true point from which to date the history of coal is that age when this fuel first came to be successfully used in the manufacture of iron, and when the steam engine—that gigantic herald of progress—awoke the spirit of invention and enterprise to unwonted and almost superhuman activity. Each year of late has witnessed new applications of machinery; and each new application of machinery has served to increase the demand for coal. Thus the way has been prepared for still other applications, and still larger demands. If the consumption of coal continues to increase at the present rate, the commencememt of the twentieth century will witness an annual demand for 300,000,000 tons. And we may confidently look for a continual increase in the demand—an increase more nearly approximating to a geometrical than an arithmetical ratio.

The age of steam has merely commenced. It were vain to speculate as to the number of ocean and river steamers, of stationary and locomotive engines that will be in operation on the first day of the next century. It is very probable that the number will exceed any calculations that would now be deemed reasonable. The supply of coal in the world must needs be large to meet the great present and the vastly greater future demands to be made.

In order to judge of the supply of coal, let us glance at the various localities in which the rich mineral deposit is found, and notice the extent of territory over which it spreads.

In the United States there are four main coal beds. One of them commences in the northern part of Pennsylvania, and sweeping southward over western Virginia, and eastern Ohio, Kentucky and Tennessee, terminates towards the central part of Alabama. It is estimated that this immense bed covers an area of 63,000 square miles, a space greater in extent than the whole of New York, Massachusetts, Connecticut, and Rhode Island. A second bed lies along the eastern side of the Mississippi River, embracing Illinois and a part of Indiana and Kentucky. A third is found in Michigan. A fourth in Iowa and Missouri. Of the extent of the latter coal bed some idea may be formed from the explorations of D. D. Owen, Esq., U. S. Geologist. "Of this coal field," he says, (in Iowa alone, not including its extension south into Missouri) "the dimensions are as follows: Its average width from east to west is less than two hundred miles; its greatest length from north to south about one hundred and forty miles; its contents about 25,000 square miles." It extends into Missouri, covering in that State an area of nearly 20,000 square miles. Smaller deposits of coal have been found also in other portions of the United States, and it is probable that further geological surveys will bring to light still other beds of the mineral. If our present statistics can be relied on, the coal fields of

the United States cover an area of about 150,000 square miles.

Deposits of coal are also found in England, Scotland, Wales, and Ireland; France, Belgium, Austria, Prussia, Northern Italy, Spain Russia, Persia, Hindostan, Assam, and China. It is found in the islands of Japan, Formosa, Borneo, some of the Philippines, Sumatra; in New Holland, New Zealand, Kerguelen's Land, and the Galapagos; in Guatemala, Peru, Bolivia, Chili, and at the Straits of Magellan. It will be evident from this hasty glance, that it is scarcely possible to pass more than three thousand miles, in any direction, across the face of the globe without meeting with it. It is dotted here and there on the great continents and on the islands of the sea. We find it in all climates and all situations; far up in Melville Island in the Arctic Ocean; in Borneo, Sumatra and the Galapagos on the very equator, and far south at the Straits of Magellan and Kerguelen's Land. And when that great Southern continent in the Antarctic Ocean, which has been touched but not explored; when that *Ultima Thule* comes to be scanned by the geologist's keen eye, no doubt, even there, he will find, amid its frost-bound hills and valleys, vast beds of coal, to make a residence therein tolerable if not actually pleasant.

He who will take the map of the world, and mark down the coal deposits that have already been discovered, and ponder well the subject, will not find it easy to draw the conclusion that they have been thrown, hither and thither, at random, by mere blind chance. They seem, rather, to have been scattered by the hand of the Creator with very judicious care, as precious seed, which, though buried long, was destined to spring up at last, and bring forth a glorious harvest.

We come now to notice the relative amount of coal stored up in different countries, and to ask what inferences we are justified in drawing from the manner of its distribution It is not possible to present very accurate statistics;

yet they will no doubt be found sufficiently accurate for our purposes.*

United States, ...	133,132
British America, . . .	18,000
Great Britain, ...	11,859
Spain, ...	3,408
France, ...	1,719
Belgium, ...	518
Total,	168,636

In the whole world there is probably an aggregate of 200,000 square miles of coal lands; and of this amount nearly three-fourths are found in the United States. The significancy of this fact it were well for every citizen of this country to comprehend. It would perchance lead him to high thoughts of the destiny which this people may work out for itself; and it could scarcely fail to awaken, in a reflective mind, a fear, lest by their own culpable neglect, they should at last come short of it.

At the present time, with her 12,000 square miles of coal, Great Britain digs annually, perhaps, 35,000,000 tons, while the United States, with twelve times the amount, digs only from 7,000,000 to 8,000,000. Great Britain digs and consumes four or five times the amount that the United States does; for over 30,000,000 are for home consumption. The result is before our eyes, in the vast development of her manufactures and her commerce; and in the position which she has, by these means, secured for herself among the nations of the earth. The elements of her might are to be found in the coal and iron which God has given to her, and in the ability to use them, as well as His other gifts to good purpose.

But these means of wealth and power, these materials so indispensible to the progress of nations, and of the race,

* These statistics are very imperfect. Recent investigations in our own country make it probable, that our own coal lands are more nearly 160,000 square miles than the amount given above.

God has also given to these States with a liberal hand. And upon their citizens he has also bestowed the ability to use them for their own good, and for the good of the whole family of man. And from the measure of these gifts, from the quantity of these materials which his own country possesses, compared with what has fallen to the lot of other nations, the citizen of the Uuited States may draw some just inferences in regard to the future of his own and of other lands.

If we make a brief comparison of the manufacturing and commercial statistics of Great Britain and the United States, it will be apparent, that the latter, though yet in its early youth is beginning already to contend with no puerile energy for the palm, with its great competitor. The manufacture of articles of iron, cotton, wool and leather is steadily advancing in our country. Our iron products for 1851, amounting to one half of those of Great Britain; our cotton, one third; our woolen, one third; our leather one half. Our manufactures, amid many reverses and difficulties, have made very encouraging progress, and our commerce has fully kept pace with our power of production.

The tonnage of the United States has beeen steadily increasing for the last sixty years. In 1801, her entire tonnage amounted only to 500,000 tons. In 1852, it was reported at 3,535,451, and was expected to advance at the rate of a quarter of a million of tons annually.

In the same year the tonnage of Great Britain was reported to be 4,144,115 tons, showing an aggregate of 608,644 tons above that of the United States. In 1854, the United States counted 4,802,903 tons; and Great Britain 5,043,270 tons; an excess of only 240,267 tons in favor of the latter. In 1855 the tonnage of the United States was, by the lowest estimate that we have seen, 5, 212,000 tons. It seems then that the annual increase since 1852 has been 558,850 tons—an increase more than twice as great as was expected. The annual increase of

the tonnage of Great Britain during the years '53, '54 was only 424,577. If the two nations preserve the same ratio of increase in subsequent years, in 1859 the United States will lay claim to the largest tonnage in the world. She will be likely to assume at an early day the highest rank as a commercial people.

It would seem as though the words of the Hon. W. H. Seward, uttered in the Senate Chamber at Washington, in the winter of 1852, had waked up the people of the United States to more vigorous efforts. At the close of his discussion of the Cuba question he said:

"You are already the great continental power of America. But does that content you? I trust it does not. You want the commerce of the world; which is the empire of the world. That is to be looked for not on the American lakes, nor on the Atlantic coast, nor on the Caribbean Sea, nor on the Mediterranean, nor on the Baltic, nor on the Atlantic Ocean, but on the Pacific Ocean and its islands and continents. Be not over confident. Disregard not France, England and Russia. Watch, them with jealousy and baffle their designs against you. But look for these great rivals where they are to be found; on those continents and seas where the prize for which you are contending with them is to be found. Open up a high way through your country from New York to San Francisco; put your domain under cultivation, and your ten thousand wheels of manufacture in motion; multiply your ships and send them forth to the East. The nation that draws most materials and provisions from the earth; and fabricates the most; and sells the most of productions and fabrics to other nations; must be and will be the great power of the earth."

We may well ask whether it is possible for these United States to become "the great power of the earth." In all humility and lowliness of mind we may watch all the eddies and ripples of that current on which we float, in order to ascertain whether it is true, that we are moving steadily

forward to that position of great honor, but of equally great responsibility. True patriotism bids us look attentively at all that concerns the present and the future welfare of our country. It is not for us to confine our attention to the present year or the present century. The staunch and sturdy Roman patriot was not content to labour for the Rome of his own day merely; but the yearnings of his great heart went out for the Rome of all coming time. This yearning inspired his thoughts and developed his energies and controlled his life. Happy will it be for this nation, when the hearts of our citizens, and our Statesmen are filled with such a yearning for the welfare of our country and the honor of our name, in all ages, till the mystery of God shall be finished and the work of time shall end.

Our subject naturally leads us to ask, what position in regard to the nations of the world these United States may naturally expect to occupy; what prophecies of the future God Himself has written on the solid rocks. There are mute prophecies graven thereon in ages long since past, by God Himself, prophecies that point to a possible future position high as any nation has attained hitherto, higher than any other nation can hope to attain in days to come. There are gathered here, in this land, those natural elements which need only to be used aright, to make these United States eventually the great power of the earth. Our great competitor for this position is the Mother Country, and we very cheerfully bid her Godspeed in every honest effort to secure it for herself; and enjoy it in perpetuity. If hers should be the honor, hers will also be the heavy responsibility. The force of circumstances, however, are against her in the race.

Most travellers on our Western waters have often witnessed an eager contest between two rival steamboats. The captain, the officers, the engineers, the firemen, the cook and the passengers, all at length enter into the spirit of the occasion; and with breathless excitement they watch the

progress of the two boats. Now one, and now the other shoots a few yards in advance. At length for mile after mile, onward they go, so nearly mated, that it might be thought one power impelled them both. Long is the suspense. But at last one of them begins to drop astern; further and still further she falls behind. With undiminished speed the other pushes forward, until her lagging competitor is seen only in the dim distance, and soon will be lost sight of altogether. The successful boat had a full supply of fuel and was enabled to push steadily on her way, while the rapidly diminishing supply of her less fortunate rival compelled her, at length, to abandon the hotly contested race.

Such it has seemed to us, is the contest between the United States and Great Britain. Of one stock, of one spirit; they are matched well for the race. It may well be thought that it will be contested long and earnestly. It becomes important then when we speculate on their chances in the race, to inquire into the comparative amount of fuel which they have in their holds. All other things remaining equal, their prospects for success must depend eventually upon this.

It may seem permature to speculate on the exhaustion of the supply of coal in Great Britain, when the area of her deposits is computed by thousands of square miles. But, thirty or forty millions of tons annually consumed, besides the waste in mining and transportation, which in the aggregate is very large, must eventually find the end of the largest possible supply. The subject has already attracted the attention of statesmen; and it would be a mark of profound wisdom were they to look at the subject more closely still. According to one computation, the supply, allowing for an increased consumption corresponding with what the last few years have witnessed, would be exhausted in about two hundred years, The bare possibility of the correctness of such a calculation ought to lead them to guard with the

most jealous care, the present and all future expenditure. The longest period that has been assigned to the duration of her supply of coal, is about seventeen hundred years. Even granting, what we sincerely hope may be true, that her supply is sufficient for the support of her fires for that long period; what is to become of her manufactures, what of her commerce, and what of her home comforts then? And, whether the supply is likely to suffice for two hundred or two thousand years, the difficulty of obtaining it will be increased from generation to generation. And what is to be the effect of even a small increase of cost, on the comfort of her people; and on her manufactures, especially those in which the cost of the fuel is an important item in the cost of the product; and remotely what will be the effect on her commerce?

When a comparison is made between the consumption of coal in Great Britain with the probable supply, and the probable consumption in the United States with her estimated supply; it would seem that the day is coming when inevitably the latter must shoot far ahead of the stout competitor which she is now striving so earnestly to reach. There is a bare possibility that some new fuel may be found long before the coal of either country is exhausted; but until there is something more than a bare possibility of this, both Great Britain and the United States will do well to husband their resources, and guard with sedulous care against any lavish expenditure of their coal.*

If the coal of the United States be indeed three-fourths

* On this subject we may quote the language of Dr. Buckland whose words it would be well for the citizens both of Great Britain and the United States to ponder well.

"As no more coal is in process of formation, and our national prosperity must inevitably terminate with the exhaustion of these precious stores of mineral fuel which form the foundation of our greatest manufacturing and commercial establishments. I feel it my duty to entreat the attention of the legislature to two evil practices which are tending to accelerate the period when the contents of our coal mines will have been consumed. The first of these is the wanton waste which for more than fifty years has been committed by the coal-owners near New castle, by screening and burning annually in never extinguished lamps *fiery heaps* at the pits' mouths, more than one million of chaldrons of excellent small coal, being nearly one-third of the entire produce of the best coal-mines in England. This criminal destruction of the elements of our national industry, which is accelerating by one-third the not very distant period when these

of that laid up by God for the use of a world, what a boon they have received from Him, and how it becomes them to be grateful to Him for His peculiar blessing. Is the land indeed to be the final resting place of religion, civilization, and the arts? Is it true that the prophecy of Berkley is to be fulfilled to the letter?

> "Westward the course of empire takes it way,
> The first four acts already past,
> The fifth shall close the drama with the day,
> Time's noblest offspring is her last."

Geology would seem to indicate it; for where are the materials for further progress to be sought, when the vast coal beds of the North American continent are exhausted? It would seem capable of demonstration, if the past history of the use of coal can be relied on as argument, that here the last act of the great drama is to be played. It is possible, that here may be, for long centuries, the grand centre of power and influence to the world. Then what should be the feelings of those to whom this land has fallen for a heritage? They should be filled with gratitude and with fear; and should sedulously guard this soil for the crowding millions that are yet to find here their home; and are from hence to send out under God, such an influence on the destinies of the world. Woe to the world, if this fair land, with its rich stores, so prophetic of future eminence, be the home of the lawless; the dwelling place of the despisers of God's law; the abode of the rejecters of God's grace in Jesus Christ. It becomes American Christians by their love of their country, by their love for mankind, by their love for the God and Father and Redeemer of the human race, to do speedily what is within their power, to

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mines will be exhausted is perpetuated by colliers for the purpose of selling the remaining two-thirds at a greater profit than they would derive from the sale of the entire bulk unscreened to the coal merchant."

The second evil of which he complains is the large exportation of coal to keep up in some cases rival manufacturing establishments that could not be continued without British coal. "An *increased duty* on coal exported to any country excepting our own colonies, he says, might afford a remedy." *Address at Anniversary of Geological Society, London*, 1841.

spread the Gospel throughout all the land and to win all the inhabitants thereof to the love and service of our Lord and Saviour Jesus Christ.

Once more to our statistics for another inference; and this inference will be of somewhat wider scope than the former. We have seen that three-fourths of the coal of the world belong to the United States; of the remaining fourth, three-fifths belong to Great Britain. That is, about nine-tenths of the coal of the world, have been thrown by the Creator into the hands of the Anglo-Saxon race; into the hands of that people who have always stood foremost in the fight when battle was to be done for liberty of conscience and for civil rights. Nine-tenths of the coal of the world in those hands which already hold the two great forces that control the world, commerce, and manufactures! There is certainly significance in the fact that to the two great Protestant powers of the world, have been given, unsought, so large a proportion of that fuel which constitutes the very bone and sinews of commerce and manufactures. He must be a very careless or a very credulous reader, who can look over the history of the nations of the earth, and notice the causes that have conspired to raise them up, and those that have tended to hasten their fall, yet see no reasons for inferring a wisdom and a foresight superior to that of men. The distribution of coal, the scattering of tribes and peoples and the raising up of nations would all seem, on any just view of the subject, to be parts of the great plan on which the Creator and Governor of the world is conducting the world's government. And they all seem, moreover, to foreshadow purposes of great good to the human family. Let us look at the facts and see what inference they warrant. A race of men energetic and enterprising; fitted by their natural characteristics, by their mental and moral culture, and by their hold on the pure gospel of Jesus Christ, to be leaders in the onward march of humanity, have had thrust into their hands, unlooked

for and unexpected, a treasure, which, if used aright, must secure to them a controlling influence on the affairs of the world. Is it not proper to infer that the God of Creation and of Providence is the God of the Bible, the God and Father of our Lord Jesus Christ; and that He has pre-arranged creation, and directed His providence, so as to further the work which the Gospel proposes to accomplish?

But we have not yet exhausted the subject. We have not yet examined all the evidences of the gracious purpose of the Creator and Governor of the world. At the very time when His first gift to the Anglo-Saxon race is coming to be properly valued, and to be used for its appropriate end; at the very time when it is raising this people to such a position among the various races of men, the two great gold fields of the world, California and Australia, are also made over to them. It is not necessary to narrate here the train of circumstances by which these two countries, with rich, but, as yet, unthought of treasures, came into the power of the United States and Great Britain; and by which almost simultaneously, the long unknown treasure was brought to light in both countries. The fact is one that is full of meaning. It certainly gives us a new reason for considering the works of Creation and of Providence, as indicating a design on the part of God the Redeemer, a benevolent design towards these nations themselves, and through them, towards the whole race of man.

Such peculiar dispensations toward these nations lift them to a distinguished position in the world, and give importance to all that pertains to their internal progress or their external policy. Sharing, jointly, in God's great blessings, it becomes them, as brothers, to stand side by side for the fulfilment of their united destiny. Great Britain is the elder, the United States the younger. The English have led the van in the use of that fuel which so rapidly generates power in the world. We with our Benjamin's portion, will emulate their example and push on in their footsteps. We

will neither envy them their priority of birth or of influence, nor will we boast of the large provision made to secure to us a glorious future. Other thoughts fill our mind. Other desires arise in our heart. We think of both nations as depositories of God's holy word, and of the Glorious gospel; and as endowed with the means of power and influence among the nations of the earth, not for their own selfish aggrandizement, but in order that they may the more rapidly spread abroad God's word, and the more efficiently further the universal triumph of Christ's gospel. We desire that they may both quit themselves nobly in their efforts for their own religious advancement, and use well all the power intrusted to them for the religious advancement of the world.

The following articles relating to the commerce and improvement of the Ohio and Mississippi, and other western rivers, are editorial articles: the first and third from the "North American and United States Gazette." Philadelphia. The second from the "Pennsylvania Inquirer.

IMPROVEMENTS OF WESTERN RIVERS.

If ever there was a work well deserving the name of national, it is the improvement of the navigation of the Mississippi, Ohio, Missouri, and their various branches. The Mississippi proper is hardly less than twenty eight hundred miles in length, and flows by or through Minnesota, Wisconsin, Iowa, Illinois, Missouri, Kentucky, Tennessee, Arkansas, Mississippi, and Louisiana. The Ohio is about thirteen hundred miles long. Pennsylvania, Virginia, Ohio, Kentucky, Indiana and Illinois, are washed by it, while its extreme branches reach New York on the north, and Alabama on the south. The Missouri, to its junction with the Mississippi, may be put down at twenty nine hundred miles—to the sea forty one hundred miles, making the longest river in the world. Its head is in the Rocky Moun-

tains, and it yet mainly flows through a region where no sound or sign of civilization is heard or seen; but on its banks States are rapidly rising—Minnesota, Iowa, Nebraska, Missouri. The Platte, an important branch of the Missouri is about a thousand miles long. Further south the Arkansas rises in the Rocky Mountains, and runs a course of nearly two thousand miles to the Mississippi, receiving numerous tributaries, and flowing through a country of very varied surface and soil. The Red river, twelve hundred miles in length, is of great importance to Texas, Arkansas and Louisiana. The streams which we have enumerated, taken together, amount to more than eleven thousand miles. Of course, a great deal of this is not now navigable; but, with all the modern improvements in engineering and construction, there is little of it, comparatively, that might not be made so. And we have said nothing of many other streams of the Mississippi Valley which elsewhere, would be termed great rivers, and in the old world would be celebrated in song, and famous as the seat of empires they had mainly contributed to build up. The aggregate would be startling were these added to the navigable waters, or waters that might be rendered navigable, which flow between the Allegheny and Rocky Mountains, and eventually find their way to the Gulf of Mexico.

Some approximation may be made to the value of the rivers of the Mississippi Valley, by considering the varied and inexhaustible natural wealth of this portion of the American continent; the fertility of its soil, sometimes several feet in depth; its forest growths of magnificent timber; its mines of iron, coal, copper, lead and lime; its high prairie land, where hundreds of thousands of cattle, horses and sheep might graze unrestrained; its production of corn, wheat, cotton, rice, sugar; its facilities for manufacturing: and, above all these, the fact that this valley is rapidly filling up with the best of all populations. Already half the population of the United States is west of the Allegheny

mountains. Railroads and canals, and electric telegraphs, find their way through the passes of this range, or tunnel it, or climb it; thought flashes like lightning from the Atlantic coast beyond the Father of Waters; emigrants, discarding the old wagon trains that formerly wound slowly over the mountains and through the wilds, roll with the speed that steam only can give to their new homes in the West; States are springing up as if by magic, and civilization, in its best form, secured by republican institutions, united with industry and intelligence, is spreading over the whole region. It requires no prophet to foretell the day when a hundred millions of people will dwell in that valley, and pour the rich abundance it will yield both towards the Atlantic and the Pacific oceans. There is no State that may not hope to share in the wealth, and profit by the growth, of the West. Its close connection with the eastern seaboard may be inferred from the fact that, with but little cost, the Mississippi river may be united to the great lakes, that the Ohio may be reached in a few hours from Philadelphia or Baltimore, and that various lines of railroads are either now constructing, or are finished, which will link Mobile, Savannah and Chareston with the lower Mississippi.

Surely with such considerations as these we may approach Congress, claiming for the Mississippi and its tributaries a national character, and urge upon that body appropriations for the improvement of the navigation of these inland waters. This work is hardly of less importance to the country at large than the erection of light houses, the construction of breakwaters, and the other measures taken by the general government for the protection and extension of commerce on the sea board. While millions are annually expended for the latter purpose, and rightly expended, almost as much more might be advantageously laid out west of the mountains. Such an expenditure would be amply remunerative, in the increased wealth, populousness and general development of this region; and it is somewhat a

matter of surprise that our western members of Congress, whether from the northern or southern section of the Union, do not unite to secure a large annual appropriation for the improvement of their rivers, thus preparing the way for the future that is before them. A great excitement has lately prevaded the people of the new States on the subject of railroads, and Congress has been persistently applied to for grants of lands for all sorts of projects. But, however useful such enterprises may be to the lately erected territories and infant commonwealths, they are not more important—hardly so important—as the removal of obstructions from streams that are otherwise unnavigable, or the construction of reservoirs, dams, locks, feeders and other works, by which obstacles that cannot altogether be removed may be surmounted. One kind of enterprise however, need not interfere with another. Both have the same object in view—the development of the country.

Pennsylvania, in common with many other States, has a particular interest in the improvement of the navigation of the Ohio. The difficulties of this stream are pretty well understood; some surveys of it have been made; many valuable suggestions relating to the mode in which its obstacles may be overcome, have been presented. The present Congress has now had its atteution called to the subject, and it is to be hoped that ere its close, it will direct all the necessary surveys of this river to be made, and thus pave the way for its improvement. Now is the time, if ever, to push forward this important work. Let all the States who have suffered from its low water stages, and from its obstructions, join in one effort to get rid of these, and they will probably be successful, and do much to increase their present prosperity and hasten the time when their productive and creative industry shall be tenfold what it now is. The loss of Pennsylvania alone, has been very great within the last year or two, by the detention of iron ware and other fabrics in her factories and warehouses,

owing to the low water in the Ohio, which, according to the opinion of competent engineers, might have been overcome by artificial means. All the loss sustained in this and other States, it is of course impossible to know, but quite enough is known to stimulate to exertion all who have at heart the interests of the States bordering on the Mississippi. It must, indeed, be a very narrow, short-sighted policy that can lead any one to oppose, or even to neglect so important a measure; and the more so, since the work is one of that general kind and magnitude that give to it a truly national character, and remove it far from most of the objections of a constitutional character, urged by some against the construction of roads, and similar internal improvements by the federal government.

THE COMMERCE OF THE WEST:

THE OHIO RIVER—ITS NAVIGATION AND IMPROVEMENT.

THE improvements of the navigation of the Ohio river is before Congress and the Legislature of Pennsylvania. In the latter the subject was some time since referred to a Select Committee, and the majority, consisting of Messrs. Hill, Eyster, Calhoun and Crawford, recently made a Report accompanied with the following resolutions:—

"Resolved, By the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met. That the Senators and members of the House of Representatives, representing the people of this Commonwealth in the Congress of the United States, be, and they are hereby earnestly requested, to use all honourable means to secure the passage of a law by the Federal Government, making a liberal appropriation of the public lands of the United States, to be used for the improvement of the navigation of the Ohio river.

Resolved that a copy of these proceedings be sent by the Governor to each of the Senators and members of Congress representing the people of Pennsylvania in the Congress and Senate of the United States, and to the Governors of the several States bordering on the Ohio and Mississippi rivers."

A Minority Report was made by a single member, Mr. Longaker, in which he differed from the gentlemen above named. The majority say that they have had the resolu-

tions which led to their appointment, under consideration, and have examined in connection with them, an "Act to incorporate the Ohio River Improvement Company," as adopted in 1855. They are of the opinion that the said Company, with the consent and approval of the several States, in and through which the proposed improvement is about to be made, will be finally able to carry out the successful completion of this great national work. They express the opinion that past experience teaches that measures of this character, although national in their features and results, are best managed by private enterprise, under proper legal restraints, and subject at all times to the power of the people who gave them existence. They feel proud as Pennsylvanians, that their State has been foremost in proposing the improvement of this great national outlet for the trade and commerce of the West to the Atlantic seaboard, and they are confident, that by the aid and assistance of our common government, a work so eminently national, will soon be completed. Railroads and canals are the achievements of peace and commercial prosperity, and are justly said to be the chains which bind people more closely together. Here is a great national thoroughfare, indicated by nature, as the channel for more than one half of the trade and commerce of this vast family of sovereign States, and which, if improved as proposed, will form a chain of fraternal and commercial union that no shock of political strife can rend asunder. It will be a triumph of art. A monument of commercial enterprise and prosperity, that future generations will point to with pride, as the work of the nineteenth century. That this work can be accomplished, is the experience of every day. That it must be done, is one of the absolute demands and requirements of commercial prosperity. The events of the past few years have fully shown that the Ohio river is at present totally inadequate to afford facilities for the trade of the west, yet in its infancy; and which, in its early struggles for an out-

let, is already forced by unnatural means, and through adverse routes, to its legitimate destination.

The Committee believe that in order to demonstrate to any mind, the nationality of this great work, it is only necessary to point to the map of the United States, and exhibit the vast extent of territory drained by the tributaries of this great avenue of trade. On the north we have the Alleghany, the Beaver, the Muskingum, the Sciota, the Miami, the Wabash and the Illinois, draining New York, Ohio, Indiana and Illinois, and bearing upon their bosoms the rich products of an empire of States. On the south we have the Monongahela, the Kanawa, the Kentucky, the Tennesse, the Cumberland, and the Greene rivers, draining the States of Virginia, Kentucky, and Tennessee of their rich agricultural products and mineral wealth, and bearing to the people of these several States, the commercial necessities furnished for them by the cities of Boston, New York, Philadelphia and Baltimore. Yet this is but a tithe of the commercial importance of this proposed work, when we consider that ultimately this river must be the main trunk through which the trade of that vast West, now beginning to populate, must find its way to the Atlantic and Pacific coasts, and giving renewed impulses to the commerce of the world. The extent of river coast, to be benefitted by the improvement of this natural artery of trade, is about forty thousand miles, and that in the very heart of our common country, the richest in the world in agricultural, mineral and commercial resources. They continue :—

"To show further the commercial importance of this great work, your committee would only allude to the fact that in the infancy of trade, and the unimproved condition of this river, its commerce has already been a source of generous commercial rivalry between all the commercial cities of the east. Boston, New York, Philadelphia and Baltimore are all equally striving to obtain even a small portion of it. To make connections between it and the Atlantic sea-board, hundreds of millions of dollars have been already expended. Pennsylvania has been most anxious, and has thus far been most successful.

Under this properly fostered system, Pennsylvania must always be most benefitted by this great work, for she is the natural depot for the eastern terminus of

its vast trade. Your committee cannot, in the brief space allotted to them, enter into detail—statistics show that its trade must amount to hundreds of millions of tons per annum. In a military poin of view, its importance to the country is beyond computation. The navigation of it on one occasion gave to the immortal Jackson the munitions of war, and the means to save the great commercial emporium of the South-west from the grasp of the haughty invaders from England.—During the last war with Mexico, its waters were almost daily ploughed by steamers bearing munitions and men to our conquering army in the territory of the Montezumas. On his first visit to the West, the great, and good and farseeing Washington, pronounced it to be the military key to the whole West, and his judgment has been approved by all those who have come after him."

Mr. Longaker, in his minority report, earnestly desires the completion of the proposed improvement, but does not think that the constitution has conferred upon the Federal Government any power to project and carry on a system of internal local improvements, and hence he is opposed to the resolutions above recommended by the majority of the Committee. How Mr. Longaker can regard this as a *local* affair, we are puzzled to understand. It has already been shown, that the Ohio river, when full, extends in length, nine hundred and fifty miles, and drains an area of about two hundred and twenty thousand square miles, or very nearly equal to double that of Great Britain and Ireland. The natural resources of this extensive country are probably not surpassed by those of any equal area on the earth. Captain Palmer, who has investigated the subject by order of the Government, thinks that the aggregate value of the annual commerce of the Ohio river, by steamers and flatboats, may be summed up thus :—

	No.	Voyages.	Tonnage.	Value.
Steamboats on the Ohio,	400	8642	2,592,600	$120,630,000
Flatboats do.,	600	9000	450,000	4,500,000
				134,130,000

The tolal value of the commerce of the Ohio valley is estimated at $371,255,836.

And yet Mr. Longaker talks of this as a *local* improvement! How utterly absurd!

The Cincinnati Gazette, of a late date, states some facts which are especially pertinent and appropriate. The fol-

lowing table gives the number of steamboats and other craft built on the Ohio for eight years, which with two years estimated, at an average, will present the ship bnilding on the Ohio for ten years ending with 1856 :—

In 1848, - - - - - - - - -	150
In 1849, - - - - - - - - -	124
In 1850, - - - - - - - - -	73
In 1851, - - - - - - - - -	126
In 1852, - - - - - - - - -	175
In 1853, - - - - - - - - -	115
In 1855, - - - - - - - - -	102
In 1856, - - - - - - - - -	150
In 1847, and 1854 (estimated) - - - - - -	254
Aggregate vessels built, - - - - - -	1269

Of these 1088 were steamers, making an average of 108 steamers per annum. The whole number built in the United States in ten years was 2158, so that *more than half of the steamboats built in the United States in the last ten years were built in the Ohio Valley.* Of the remaining 181 vessels, two were ships built at Cincinnati; two were brigs; one was a schooner; and the residue sloops and canal boats.

The voyages of these boats cannot be precisely ascertained, but an approximation may be made sufficiently near to form a very correct estimate of the general navigation of the Ohio. The average number of *arrivals* of steamboats at Cincinnati for several years has been 3600 per annum. The number of *steamboats* which made these vovages, was an average of 300. The number of *departures* the same. Counting a voyage, (as it properly is) from one port to another, each boat on the Western rivers has made *twenty-four* voyages per annum—most of which have been from three to four hundred miles in length. The total number of *voyages* made on the Ohio river, may be estimated at *ten thousand*—probably more. The average tonnage of the boats is about 220 tons, and their capacity of freight much greater. We estimate the amount of tonnage at *two millions of tons.* The *value* of this, estimating it at a general aver-

age of flour, sugar, and merchandise, must be at least *two hundred and fifty millions of dollars!*

In regard to losses by the dangers of the Western rivers, we learn from a Report that was some time since made to the Senate, by Mr. Corwin, the following facts:—

Boats built prior to 1849,	1,656
Lost by disasters,	736
Lost by the dangers of the river, (snags, &c.)	419
Whole loss on boats,	$5,643,791
Loss on boats by *dangers* of the river,	3 368,098
Losses on cargo,	12,698,529

To bring this estimate of losses down to the present time, we shall add the number of boats built since 1849, and deduct the *pro rata* losses on that number.

Built on the Ohio since 1849,	811
At other places,	100
Pro rata losses,	400
Pro rata value of boats and goods,	$7,500,000

Out of 2567 steamboats built on the waters of the West, 1136 have been *destroyed* by *various disasters*, making an aggregrate loss of more than *twenty million of dollars* on steamboats alone; for, it must be borne in mind, that the loss of flat boats and coal boats is immense. Of this total loss, probably more than one-fourth occurred on the river Ohio.

Surely, under such circumstances, and with such an array of figures before them, the members of Congress and of the State Legislature, can come to but one conclusion. The Ohio river is a great national highway. It washes the borders of Pennsylvania, Virginia, Kentucky, Indiana, Illinois and Tennessee, and is invaluable to all those States, as a means of travel and transportation. Over thirteen millions of inhabitants are directly concerned in its improvement, and the representatives of the States named, owe it as a duty to their constituents, to exert themselves in the most energetic manner , with the object of securing the aid of Congress towards an undertaking of such immense im-

portance. The interests involved are vast. They amount in the aggregate to many millions of dollars per annum.

OUR COAL AND THE COAL TRADE.

The carboniferous regions of the globe are mainly enclosed within the Arctic circle and the Tropic of Cancer—forming a kind of mineral belt that stretches especially over the corresponding portions of Europe and America—and, among the various districts into which the coal formations are distributed, Pennsylvania stands conspicuous, and perhaps, all things considered pre-eminent. Coal beds are of value in proportion to the demand for the mineral which they contain, and to the facilities for reaching it and bearing it to the places of consumption. And, therefore, as the Pennsylvania beds lie in the neighborhood of large cities, that consume a large amount of coal for fuel, and close by the great iron deposits, which also bring immense quanties of coal into requisition; and as the whole State is not only admirably located in respect to the domestic and foreign trade, but is also traversed throughout with railroads and canals to carry its productions to every point of the compass, it follows that the coal areas are of the very highest value, and must relatively continue so for the time to come. Her position, taken conjointly with the extent of her coal formations, gives Pennsylvania a foremost place among all the coal-bearing regions of the globe.

It appears from Taylor's work on coal, that out of 184, 073 square miles of available coal area, the United States has 133,132 square miles, or very nearly three quarters of the whole amount. New Brunswick, Nova Scotia, Cape Breton and Newfoundland, comprising 81,113 square miles of territorial area, possess 18,000 of coal land. England, Scotland, Ireland and Wales, with an entire area of 120, 290 square miles, have a coal area to the extent of 11,859 square miles. The proportions of coal areas to the whole

superficial areas are, in France 1,719 to 203,736 square miles; in Spain, 3,408 to 177,781; in Belgium, 518 to 11, 372. The United States, excluding Texas and Oregon, contains about 2,280,000 square miles; but the twelve coal producing States possess an aggregate area of 565,283; and these, as we have seen, contain coal areas to the extent of 133,132. In these States, the proportions of the territorial and the coal areas are, in square miles, as follows:—Alabama, 50,875 to 3,400; Georgia, 58,200 to 150; Illinois, 59,130 to 44,000; Indiana, 34,800 to 7,700; Kentucky, 39,015 to 3,500; Maryland, 10,829 to 550; Illinois, 59, 520 to 5,000; Missouri, 60,384 to 6,000; Ohio, 38,850 to 11,900; Tennessee, 44,720 to 4,300; Virginia, 64,000 to 21,195. Pennsylvania, with an area of 47,000 square miles, has a coal area to the extent of 15,437, comprising extensive beds of the anthracite, which is found in no other part of the country.

Thus will be seen that, with the exception of the States of Illinois and Virginia, Pennsylvania possesses a larger proportionate coal area than any State in the Union or any country on the globe. Her coal formations exceed those of Great Britain and Ireland by 4000 square miles. And of the two States alluded to, Virginia is relatively side by side with Pennsylvania; while the advantages of position give to the coal beds of the latter, a value which those of the other two States do not possess. They would command in the market a far higher price now; they will always yield a much greater return in money. But the plain figures and facts are all the evidence that we need to adduce on this point. The anthracite coal production of Pennsylvania for the year 1856, amounted to 7,258,891 tons. It is impossible to determine the precise amount of bituminous, semi-bituminous, and the other kinds (not anthracite) produced; but we are safe to estimate them at 2,000,000 of tons. Thus we have as the product of this State for the year just closed.

Anthracite, ...	7,258,891 tons.
Bituminous, semi-bituminous, etc., . . .	2,000,000 "
The entire amount.	9,258,891 tons.

If—for the purpose of making a rough culculation of the value of this huge amount—we estimate the price of each kind of coal at $4,25 a ton at the place of consumption, then we have an aggregate of $39,355,687, as the value of this year's production from the coal fields of Pennsylvania. These tons, these dollars these startling figures, set forth the wealth, enterprise and industry of this State far better than any figures of speech could do it. That is the money value of a product—wrought out of the bowels of the earth by dint of hard and honest labor—which illuminates our streets at night, which warms our dwellings in the winter, which makes the motive power of almost all our machinery, and which contributes in countless ways to the comfort of man and the progress of society,—so that Pennsylvania can proudly say, "if the sum is great, it is also fairly earned."

This, it will be observed, is the value of the yield of coal in this State for one year. But since the commencement of the trade, which very feebly began in 1820, the aggregate of the anthracite coal sent to market from the different regions of Pennsylvania has reached 62,793,039 tons. If we estimate the other kinds of coal produced in the State at 10,000,000 tons, then we have 72,793,039 tons as the total yield of this state since the trade began. This, at the price assumed above, $4,25 at the place of consumption—(which the table of prices will prove to be a low estimate,) would have a value of $309,370,481. M. Chevalier, speaking of the late John Price Wetherill, says that "he showed me in 1835 the place where, twenty years before, he had dug a hole to bury the anthracite, then looked upon as incombustible refuse." Five years after that period this stream of wealth began to flow, and in the short space of thirty-six years it has attained to this vast

breadth and depth. At the end of a similar period of time in the future, what almost incredible numbers will be required to set forth the annual and the aggregate production and value of the coal of Pennsylvania. The annual coal production of Great Britain is at present about 40,000,000 tons; so that this State produces within a fraction of one quarter of the amount which the extensive coal mines of that country yield. If this had been prophesied thirty-six years ago in England, who would have credited the prediction, or believed that Pennsylvania would stand next to Great Britain in this most important and useful branch of industry?

The coal production in the other States is so trifling in amount that its statistics have no interest nor value. The coal trade of the United States reduces itself simply to the coal trade of Pennsylvania. The western part of the State, especially the vicinity of Pittsburg, where it is employed so largely in manufactures, yields the estimated 2,000,000 tons of bituminous coal. Of the 7,258,891 tons of anthracite, the Schuylkill or southern district furnished 3,318,199 tons, and the remainder, amounting to nearly 4,000,000 tons, was produced in about equal proportions by the middle of Lehigh district, and the northern or Lackawanna district. From these sources in our State the whole country derives nearly all its supply of coal. The United States export to a considerable amount; but we import still more largely. Our exports for 1855 amounted to 110,586 tons, at a value of $637,006, which found a market chiefly in Canada and other British American colonies, in Cuba and other West India islands, in Central America and Mexico. Our imports for the same year were 287,408 tons, at a value of $903,067. The principal part of this amount comes from England, which furnished us with 158,160 tons, and from Scotland, which furnished us with 13,670 tons. The imported coal is employed chiefly in ocean navigation, and can, therefore, hardly be said to enter into the home

supply ; at the West, (especially after deducting the amount exported by us,) it adds but a trifle to the quantity which is consumed in the United States.

We have given above but a partial review even of the outline of our coal statistics; but it suffices to show the extent of our resources in this great element of wealth and progress, and the degree to which this element has been rendered available by the enterprise and industry of Pennsylvania, that possess a useful and worthy memento in almost any heap of coal that may be found in any part of the whole country. No Pennsylvanian can contemplate these facts, which speak more of the future than they do of the present or the past, without having his partiality and pride for his native State rekindled within him ; nor can the citizen of any State ponder them, without feeling that it would be a sacrilegious deed to impair the prosperity of this and other connected branches of our industry, by narrow, rash and un-American legislation,

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HISTORY AND PROSPECTS OF THE COAL TRADE IN FIGURES.

In our article of Wednesday we stated that the bituminous coal production of Pennsylvania, for the past year, is estimated at 2,000,000 tons, and that the anthracite trade amounted to 7,258,891 tons,—making an aggregate of 9, 258,891. The total value of our coal for 1856, reckoned at $4,25 a ton at the place of delivery or consumption, would be but a fraction short of $40,000,000,—a sum more than sufficient to meet the ordinary annual expenses of our national government.

This result has been attained after years of persistent enterprise. The coal trade has progressed step by step, and its history in the past is interesting and valuable for the help it affords us in forming an estimate of what that trade must become in the future, developing side by side

with the progress of the country and the civilization of the age. In the year 1825, the amount of bituminous coal employed in the manufacturing establishments of Pittsburg and vicinity was one million of bushels, which at eighty pounds to a bushel, would amount to 35,714 tons. In 1833, it was returned at 255,910 tons. In 1838, it had increased to 357,140 tons. In 1842 the production largely exceeding the consumption, amounted to 420,000; which was increased in 1846 to 678,572 tons. The bituminous coal produced during the past year, amounted to no less than 2,000,000 tons, the principal part of which was consumed in the iron works of western Pennsylvania; while, with the remainder, a profitable trade was carried on with the regions adjacent, with the West, and with Philadelphia.

When we touch on the subject of anthracite coal we have definite facts and statistics. And we can present the history of this trade in no more striking and impressive manner, than by arraying the successive years and their corresponding productions, side by side, beginning at the very commencement of the trade, thirty-six years ago.

1820,	365	1840,	865,414
1821,	1,073	1841,	953,899
1822,	2,240	1842,	1,193,001
1823,	5,823	1843,	1,263,539
1824,	9,544	1844,	1,631,669
1825,	34,893	1845,	2,023,052
1826,	43,046	1846,	2,343,990
1827,	63,434	1847,	2,982,808
1828,	77,697	1848,	3,089,238
1829,	172,083	1849,	3,242,866
1830,	174,764	1850,	3,332,614
1831,	176,820	1851,	4,418,515
1832,	363,871	1852,	4,999,471
1833,	487,733	1853,	5,195,151
1834,	376,336	1854,	5,847,308
1835,	560,758	1855,	6,626,288
1836,	682,423	1856,	7,258,891
1837,	881,473		
1838,	739,293	Aggregate,	62,793,039
1839,	809,327		

This is one of the most eloquent and instructive pages of history ever written—not red and radiant with martial glory, but bright with the record of honest labor and gigantic enterprise, and their rewards—a narrative of what

has been done in our own Commonwealth in a single department of industry, for the comfort, happiness and well-being of multitudes of mankind. Adding 10,000,000 tons as the product of the bituminous coal beds during this period, we have the general aggregate of 72,793,039 tons of coal sent to the markets from different regions of Pennsylvania; which, at the price above specified, would have a value of three hundred and nine millions of dollars. This is one of the striking facts. Another is, that such great results have been reached in so short a time.

But the most speaking of all the facts treasured up in these figures, because it contains such vast and veritable prophecies of the future, is the rapidly augmenting ratio at which these yearly amounts increase. This is noticeable to a mere glance of the eye. The year 1838, which stands midway between the first and last of the series, shows a production of only one-tenth of the amount which is set down against the year that has just closed, 739,293 to 7,258,891. We must come to 1846, before finding an amount (2,343,990) that reaches even so much as one-third of the last annual yield. Nay, the last three years sufficed to produce as much coal as was produced by the first twenty-six years of the series. Dividing the amount into thirds, the first third was mined in twenty-six years; the next third in seven years; and the last third in three years. If there is any just ground for the prediction that in twenty years the iron production of the United States will equal the present iron production of Great Britain, raising from 1,000,000 to 3,500,000 of tons, these figures demonstrate that not so many years can elapse before our 10,000,000 of coal (all kinds included), will swell to the 40,000,000, which is the present annual yield of that country. If the same ratio continued, the result would be attained in a much shorter time.

We have only to think of the increasing uses to which this combustible mineral is applied in commerce and the

arts, and of the growing need for it in many communities of large and rapidly augmenting population, as their only available species of fuel, in order to be fully convinced that the above figures will not mislead us as to the future traffic of our State in this one element of its wealth. There is every reason to believe that the demand will increase at a ratio that shall outrun all the means employed to meet it, especially in reference to the anthracite, which is peculiar to Pennsylvania. Of coal, there was imported into the city of London in the year

1846	2,953,755 tons.
1847	3,280,420 "
1848	3,418,340 "
1849	3,339,146 "
1850	3,553,304 "
1856 (estimated)	4,200,000 "

Other large cities in England, like Manchester and Birmingham, consume relatively as much coal as London. This demonstrates what immense and reliable markets for this species of fuel, those towns and cities must become that cannot supply themselves with wood. The difference is that, where it is employed in our country, much more is consumed in proportion to the population than in England, and that every year there is a demand for it from some city, town or district that has not used it before.

Its increasing use in navigation and the arts brings us to the same conclusion as to the demand for it in the future In 1847, 483,000 tons of anthracite, and 9,007,600 bushels of bituminous coal, were consumed simply in the iron works of this State. In general, for every ton of anthracite pig iron made 2½ tons of coal are used, and for every ton of bar or finished iron (including rails) 2½ additional tons of coal are used; so that the 439,186 tons of pig iron, and the 227,837 tons of finished iron made in 1855 in Pennsylvania consumed in their manufacture 1,667,657 tons of coal,—one-quarter of the coal that was mined during that year! This fact shows to what an extent the coal interest

of our State depends upon the iron interest: but it only shows it in part. For iron enters largely into our manufactures, and coal supplies the motive power to almost all the machinery with which every species of manufacture is carried on in this State, and thus finds market for another quarter of its annual product.

All this vast amount must be carried from the place of production to the place of consumption; and this furnishes profitable employment to the carrying interest, to our railroads, to the boats on canals, rivers and lakes, and to a fleet of coasting vessels. Thus, indirectly, the coal trade gives labor and wages to many thousands of persons, besides those who are employed in the mining operations. These would number something like 40,000 persons, representing a population of 200,000 souls, who are consumers of agricultural productions to the amount of many millions of dollars, and of merchandise to the amount of many millions more. After these facts and figures, it is not necessary to multiply words for the purpose of showing how important is the coal trade to the prosperity and wealth of Pennsylvania, in the present certainly, but much more in the future. Nor can any one fail to observe that the interests of the various departments of industry are all so closely indentified, that one of them cannot be weakened or destroyed without ruin or harm to the rest.

ANTHRACITE COAL TRADE OF THE UNITED STATES.

The following Table exhibits the quantity of Anthracite Coal sent to market from the different regions in Pennsylvania, from the commencement of the Trade, in 1820, to 1856, inclusive; together with the Annual Increase.

Years.	EASTWARD TO TIDE WATER.					Other Regions Westward.	Aggregate.	Annual Increase.	Aggregate in each period of 5 years.	Av.annual delivery for each period.	Av.annual increase ea. period over the preceding.
	Schuylkill	Lehigh.	Lacka'na.	Pittston.	Scranton.						
1820	.....	365	.....	.....	....	.....	365				
1821	.....	1,073	.....	.....	....	.....	1,073				
1822	.....	2,240	.....	.....	.....	.....	2,240				
1823	.....	5,823	.....	.....	.....	.....	5,823				
1824	.....	9,541	.....	.....	.....	.....	9,541		19,042	3,899	
1825	6,500	28,392	.....	.....	.....	.....	34,893	25,352			
1826	16,767	31,280	.....	.....	.....	.....	48,047	13,154			
1827	31,360	32,074	.....	.....	.....	.....	63,434	15,837			
1828	47,284	30,232	.....	.....	.....	.....	77,516	14,082			
1829	79,973	25,110	7,000	.....	.....	.....	112,083	34,567	335,973	67,194	13,438
1830	89,984	41,750	43,000	.....	.....	.....	174,734	62.651			
1831	81,854	40,966	54,000	.....	.....	.....	176,820	2.086			
1832	209,271	70,000	84,600	.....	.....	.....	363,871	187,051			
1833	252,971	123,000	111,777	.....	.....	.....	487,748	123.877			
1834	226,692	106,244	43,700	.....	.....	.....	376,656	decre'se	1,579,809	315,961	49,753
1835	339,508	131,250	90,000	.....	.....	.....	560,758	184,122			
1836	432.045	148.211	103.861	.....	.....	.....	682,428	121,670			
1837	523,152	223 902	115,387	.....	....	.....	881,476	199,048			
1838	433,775	213,615	78,207	... .	.....	.....	739,293	decre'se			
1839	442,608	221,025	122,300	.....	.....	11,930	819,527	80.034	3,683,282	736,656	84,139
1840	452,291	225,318	148,470	.....	.....	15,505	865,414	46,087			
1841	584,692	143,037	192 270	.....	.....	21,463	958.899	93.485			
1842	540,892	272,546	205.253	.....	.....	57,346	1,108,001	149,102			
1843	677,295	267,793	227,605	.....	.....	68,000	1,263,539	155,538			
1844	839.934	377,002	251,005	.....	.....	127,993	1,631,669	368,130	5,827,552	1,165,504	85,769
1845	1,083,796	429,453	273,435	.....	.....	188,401	2,023,052	391,783			
1846	1,237,002	523,002	320,000	.....	.....	205,075	2,343 992	320,940			
1847	1,583,374	643,973	388,203	.....	.....	299,302	2,982,303	638,317			
1848	1,652,835	680,746	437,500	.....	.....	256,627	3,089,238	106,929			
1849	1,605,126	801,246	454,240	.....	.....	303,736	3,242,541	153,403	13,681,132	2,736,226	314,144
1850	1,712,007	722,622	432 339	111,014	.....	276,339	3,254,321	11,780			
1851	2,184,240	989,296	472,478	316,017	.....	415,099	4,377,130	1,122,809			
1852	2,452,026	1,114,026	497,839	426,164	.....	439,342	4,925,695	548,565			
1853	2,470,943	1,080,544	494,327	512,659	.....	556,018	5,114,491	188,796			
1854	2,895,208	1,246,418	438,406	496,648	.....	676,689	5,753,369	638,878	23,425,006	4,685,001	389,755
1855	3,430,768	1,284,114	565,460	504,803	.....	767,156	6,552,301	798.932			
1856	3,258,356	1,351,970	499,650	612,500	112,773*	906,293	6,751,542	199,241			

* The Bituminous Coal trade of the West, not being yet reduced to a system, the above is only an approximation. the actual amount produced in 1856 was about 2,000,000 of tons, and the increase is at least 20 per cent. per annum.